CrossMark

Studies in Second Language Acquisition **39** (2017), 381–399
doi:10.1017/S0272263117000183

Epilogue to the Special Issue

TASK-BASED PRONUNCIATION TEACHING AND RESEARCH

KEY ISSUES AND FUTURE DIRECTIONS

Joan C. Mora*

Universitat de Barcelona

Mayya Levkina

Universitat de Barcelona

Abstract

This article synthesizes the conclusions of the empirical studies in this special issue and outlines key questions in future research. The research reported in this volume has identified several fundamental issues in pronunciation-focused task design that are discussed in detail and on which suggestions for further research are outlined. One crucial issue is how attention to pronunciation resulting in language-related episodes effectively leads to robust gains in accuracy. Another important aspect discussed is the need to adapt task design features to the phonological domain under focus and how to incorporate systematic patterns of first language interference into the task structure. Finally, we propose that future research in task-based pronunciation teaching and second language phonetics and phonology should systematically examine learner factors known to affect task performance and task features established in the research domains of lexical and grammatical development.

INTRODUCTION: PRONUNCIATION AND ATTENTION TO PHONETIC FORM

Recent surveys and studies about second and/or foreign language (L2) pronunciation instruction have evidenced teachers' difficulties in implementing pedagogical tools to make pronunciation instruction effective and in deciding what aspect of pronunciation

We would like to thank the editors of this special issue for their useful comments and suggestions on a previous version of this article. We would also like to thank the contributors to this volume for their inspiring presentations and discussion at the 2015 TBLT conference in Leuven (Belgium). This research is partly funded by AGAUR grant SGR137 from the Catalan government to the first author.

*Correspondence concerning this article should be addressed to Joan C. Mora, Departament de Llengües i Literatures Modernes i Estudis Anglesos, Facultat de Filologia, Universitat de Barcelona, Gran Via de les Corts Catalanes, 585, 08007 Barcelona, Spain. E-mail: mora@ub.edu

Copyright © Cambridge University Press 2017

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

(e.g., accuracy in segmental production, suprasegmentals, overall intelligibility) should be the focus of instruction (Baker, 2014; Darcy, Ewert, & Lidster, 2012; Derwing & Foote, 2011; Foote, Holtby, & Derwing, 2011; Henderson et al., 2012). L2 speech is usually accented, reflecting systematic phonological differences with respect to the speech of native speakers, mostly due to first language (L1) influence on the L2 (Derwing & Munro, 2009; Munro, 1998). Although the presence of an accent in learners' L2 speech is perceived by listeners as being partly related to other dimensions of nonnative speech, such as comprehensibility, intelligibility, and fluency (Derwing & Munro, 2013), the mechanisms underlying interlearner differences in the productive dimensions of L2 speech, such as fluency and accentedness, are essentially different. With respect to fluency, L2 speech production differs from L1 speech production mainly due to learners' limited range of lexical and grammatical knowledge, which results in general lack of automaticity (i.e., inefficient, effortful grammatical, lexical and phonological encoding) in the formulation and articulation of the intended message (de Bot, 1992; Kormos, 2006; Segalowitz, 2010), leading to slower, often dysfluent, speech production. Although speaking fluency is partly due to individual speaking styles (de Jong, Groenhout, Schoonen, & Hulstijn, 2015), speaking in the L2 is generally slower and more effortful than speaking in the L1 (Derwing, Munro, Thompson, & Rossiter, 2009). Regarding accentedness, L1 speech is nativelike, that is, produced with the segmental and suprasegmental properties characteristic of other speakers of the same language variety. At the segmental articulatory level this involves producing vowels and consonants accurately in terms of their place and manner of articulation and their voicing and durational characteristics. This requires making use of automatized articulatory gestures in the production of segmental sequences and their timing across various speaking styles (Browman & Goldstein, 1992). At the suprasegmental level, L1 speech denotes correct lexical stress placement and accurate use of linguistic rhythm and intonation patterns. However, in L2 speech, some or all segmental and suprasegmental dimensions of speech production deviate consistently, to varying extents and in noticeable ways from L1 speech. For example, L2 articulatory targets may not be executed completely, accurately or fast enough to produce L2 sounds in a nativelike manner, or lexical stress may be misplaced due to transfer of L1 stress assignment rules, all of which would lead to accented L2 speech. Given the different nature of the mechanisms underlying L2 speech production in terms of its general temporal features (e.g., speech rate, pause frequency and duration, articulation rate) and its phonetic-articulatory implementation, we do not include L2 speaking fluency as part of L2 pronunciation skills. By L2 pronunciation we refer to L2 learners' production of speech in the L2, especially to learners' degree of targetlike accuracy in the realization of L2 sounds (vowels and consonants) and sound sequences (phonotactics), in the placement of lexical stress, and in the use of linguistic rhythm and intonation patterns. The main goal of L2 pronunciation instruction, and of the task-based pronunciation teaching (TB*P*T) approaches illustrated by the empirical studies in this special issue, is not to completely eradicate L1 accents from L2 speech, but to develop learners' L2 pronunciation skills improving pronunciation accuracy to achieve higher levels of comprehensibility, which may in addition be accompanied by substantial accent reduction (Derwing & Munro, 2015; Levis, 2005; Saito, 2011). Achieving high levels of intelligibility is an important aspect of daily life, as we increasingly often need to use voice recognition technology to operate a variety of

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

devices that fail to work properly with speech that is too deviant from the speech in the databases such systems are trained on (Benzeghiba et al., 2007).

Several researchers have stressed the importance of integrating pronunciation instruction into language teaching curricula at all levels of competence and in every lesson (Burgess & Spencer, 2000; Darcy et al., 2012; Sicola & Darcy, 2015; Zielinski & Yates, 2014). Additionally, recent reviews of pronunciation studies have shown that pronunciation instruction is effective for learners of different proficiency levels and L2 experience (Lee, Jang, & Plonsky, 2015; Saito, 2012; Thomson & Derwing, 2015), supporting the view that the inability of L2 speakers to modify their pronunciation after years of speaking the L2 is more a myth than an unquestionable truth (Derwing & Munro, 2014). This view is also supported by evidence from lab-based phonetic research demonstrating learners' gains in L2 speech perception and production after training on high variability phonetic input (e.g., Cebrian & Carlet, 2014; Iverson, Pinet, & Evans, 2012; Lively, Logan, & Pisoni, 1993; Thomson, 2012). In instructed SLA, empirical evidence suggests that the development of L2 pronunciation is driven primarily by an instructional focus on phonetic form, such as providing corrective feedback in the form of mispronunciation recasts (Saito, 2015). For example, the benefits of focusing on phonetic form have been reported by studies providing learners with explicit instruction (e.g., Derwing, Munro, & Wiebe, 1998; Gordon, Darcy, & Ewert, 2013; Kissling, 2013; Saito, 2013) as well as by studies providing a communicative focus on phonetic form without explicit instruction (e.g., Park, 2000; Saito, 2015). These studies show that if there is focus on phonetic form there are benefits for L2 pronunciation, suggesting that integrating attention to phonetic form into task-based language teaching (TBLT) may be an efficient way of promoting the development of L2 pronunciation.

Attention to phonetic form and L2 pronunciation development in the context of TBLT can be achieved through the same general form-focused instructional techniques (e.g., providing negative feedback) and task features and task manipulations (e.g., in repetition or complexity) that have proved effective in the development of grammar and lexis (Baralt, Gilabert, & Robinson, 2014; Lyster, Saito, & Sato, 2013; McDonough & Mackey, 2006). However, beyond the previously mentioned techniques used to explicitly focus on pronunciation, TBLT advocates for a more natural approach where focus on form (FonF) is not artificially imposed but rather driven by the context the task is placed in. Tasks are defined as real-world communicative activities "to which learners will put the L2 beyond the classroom—the things they will do in and through the L2" (Long, 2016). In this regard, tasks are incorporated into the syllabus and designed according to students' communicative needs, rather than designed based on a vocabulary or grammar topic. These needs, in turn, might be fulfilled by focusing on lexis, grammar, or pronunciation in the pretask (Skehan, 1998a, 1998b) and the task cycle (Willis, 1996) or in all phases (Ellis, 2003). Research has shown the potential of task-based syllabus design based on meaningful tasks for enhancing learners' attention to form through context (e.g., Baralt et al., 2014). In addition, the integration of specific target pronunciation forms and phonological dimensions into the design and structure of tasks needs to consider the specific role that input, noticing, attention, and awareness have been shown to have in L2 speech learning.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

INPUT, NOTICING, ATTENTION, AND AWARENESS IN L2 SPEECH LEARNING

Flege's (1995, 2003) influential speech learning model (SLM) argues that adult L2 learners retain the ability to modify existing phonetic categories and develop new ones for L2 sounds if they are provided with favorable input conditions (Flege, 2009; Moyer, 2009). Phonetic categories have a perceptual basis (Escudero, 2009; Flege, 1995) and reflect the distributional regularities present in the input that learners acquire (Kuhl et al., 2008). Within this perception-based account of L2 speech learning, learners' accuracy in L2 speech production reflects the nature of the developing L2 phonetic representations stored in long-term memory, which are malleable and permeable and sensitive to linguistic experience and amount and quality of L2 input exposure. However, previous L1 experience interferes with the formation of L2 sound categories in systematic, predictable ways. For example, research has shown that when a pair of L2 sounds is unequivocally mapped onto a single L1 sound category and both are perceived to be equally similar or dissimilar to it, it is extremely difficult for learners to acquire the contrasting L2 sound categories (e.g., English /r/-/l/ for Japanese learners of English). Thus, perceptual cross-language mappings are useful in predicting acquisition difficulty for L2 sound contrasts (Best & Tyler, 2007). Overcoming L1 interference requires extensive exposure to L2 input (Flege, Frieda, Walley, & Randazza, 1998) and/or intensive phonetic training (Iverson et al., 2012; Thomson, 2012), both of which facilitate L2 phonological acquisition and efficient phonological processing in the recognition and production of L2 words (Bradlow, 2008). A major constraint in L2 speech learning is learners' inability to perceptually identify phonetic and phonological cross-language differences (Flege, 1987). This ability can be enhanced through increased L2 experience (Best & Strange, 1992; Cebrian, 2006) or, in phonetic training, through various input manipulation techniques that effectively direct learners' attention to the critical acoustic features in the acquisition of a given L2 sound contrast or pattern (e.g., Iverson, Hazan, & Bannister, 2005; Jamieson & Morosan, 1986; Ylinen et al., 2010). It can also be enhanced by explicitly instructing trainees to attend to specific aspects of the speech input (Pederson & Guion-Anderson, 2010) or by manipulating the structure of the training procedure, for example alternating periods of practice with periods of exposure without practice (Wright, Baese-Berk, Marrone, & Bradlow, 2015).

The general principle underlying the effectiveness of such methods is that the relevant properties of the speech input need to be attended to and noticed for learning to take place because, at some level of processing (e.g., acoustic, phonological), awareness of the key feature will have taken place. Despite the difficulty in developing learners' phonological awareness in the L2 as opposed to other domains of L2 knowledge, such as grammar and lexis (Kivistö-de Souza, 2015), directing learners' attention to phonetic form through various task design features can prove effective in developing learners' L2 speech perception and production. Instructed SLA research has shown that noticing and attention are essential to learning (Schmidt, 1990, 1995, 2001) and can be enhanced through various instructional techniques, such as processing instruction (VanPatten, 2002), input enhancement (Sharwood Smith, 1993), or FonF (Doughty & Williams, 1998; Long, 1991). However, the role of directing learners' attention to specific phonetic features of the input in L2 speech learning is under-researched beyond the domain of phonetic training. Except for the five empirical studies in the present special issue, no

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

research to date has systematically investigated the potential of manipulating task features in enhancing attention to phonetic form, promoting noticing and awareness of phonological cross-language differences. An important methodological consideration is how attention to phonetic form can be best integrated into a communicative approach to language teaching based on meaning-based interaction, and whether a focus on meaning (FonM) might be detrimental to noticing phonetic properties in the input that are essential to L2 pronunciation development at certain proficiency levels.

ATTENTION TO FORM AND ATTENTION TO MEANING IN L2 PRONUNCIATION TEACHING

Studies investigating the differential effects of FonF and FonM on L2 pronunciation gains during interactive communication indicate that there needs to be a focus on phonetic form for improvement in pronunciation to take place but that FonM is not necessarily detrimental to learners noticing and processing phonological properties in the L2 speech input. For example, Guion and Pederson (2007) showed that phonetic learning occurred when learners were instructed to attend to the phonetic properties of the speech stimuli in the training but not when instructed to attend to their meaning. Park (2000) showed that both a forms-focused and a forms- and meaning-focused (but not a solely meaning-focused) instructional treatment proved to be effective in improving L2 lexical stress assignment. Thus, it appears that, in the absence of a focus on phonetic form, development of L2 pronunciation is unlikely to take place in meaning-oriented communication, even in the presence of corrective feedback on linguistic accuracy involving pronunciation recasts (Saito & Akiyama, 2016). Saito and Akiyama (2016) found a significant impact of interactive feedback on comprehensibility, fluency, vocabulary, and grammar, but not on accentedness and pronunciation. Similarly, in an auditory priming experiment with learners differing in L2 pronunciation accuracy, Trofimovich and Gatbonton (2006) found FonM to be detrimental to the priming of L2 words for low-accuracy learners but not for high-accuracy learners, who obtained priming effects in both the FonF and FonM conditions. These studies suggest the need for integrating a focus on phonetic form in interactional task designs to generate pronunciation-focused feedback that would direct learners' attention to specific phonological features and at the same time elicit their use in meaningful interaction.

Therefore, within a TBLT approach to L2 pronunciation development, research needs to address several key issues in pronunciation-focused tasks, such as how a real-world communicative task can be designed to enhance pronunciation learning, how task complexity can be manipulated, and whether the already established categories for manipulating it (e.g., resource-directing variables such as the +/- few elements or +/- here and now; Robinson & Gilabert, 2007) are applicable to pronunciation. What kind of input should be used to better enhance a focus on phonetic form, explicit or implicit, instructed or uninstructed, is also important. Some of which have been investigated for the first time in the empirical studies included in the present issue. These studies are the first to investigate the effectiveness of tasks in drawing learners' attention to phonetic form during communicative task performance and assess improvement in L2 pronunciation accuracy. In doing so, they fill a gap in the TBLT research literature, which has not examined the effect of task features on the phonological dimension of L2 oral

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

production, and significantly contribute to L2 speech learning research. The role of tasks in developing L2 pronunciation is explored from the perspective of crucial task features, such as the enhancement of attention to phonetic form, task repetition, L1 pairing in collaborative interactive tasks, the role of task complexity in L2 phonetic production, and the role of task modality in L2 pronunciation. In what follows, we highlight the significance of the findings of the empirical studies in this issue for these areas.

PRINCIPAL FINDINGS OF THE EMPIRICAL STUDIES IN THIS SPECIAL ISSUE

The studies by Solon, Long, and Gurzynski-Weiss (2017); Parlak and Ziegler (2017); and McKinnon (2017) exemplify research on the role of tasks in drawing learners' attention to phonetic form to facilitate improvement in L2 pronunciation accuracy. Solon et al. analyzed whether a more cognitively complex task could elicit more language-related episodes (LREs) focusing on the pronunciation of L2 Spanish vowels and whether this had consequences for vowel production accuracy. During the completion of a more complex task, participants produced a higher number of LREs. However, when controlling for the time learners spent on task completion, the rate of LREs was higher (albeit not significantly) in the case of cognitively simpler than cognitively more complex tasks. Vowel production accuracy generally became slightly more targetlike in cognitively complex than cognitively simple tasks, attesting the potential of pronunciation-focused LREs for pronunciation development. Parlak and Ziegler analyzed the role of mode and of recasts in the correct placement of stress on three- and four-syllable words in L2 English. Although no significant results were obtained in terms of pitch, intensity, and duration, overall acoustic analyses showed a beneficial effect of recasts on learners' ability to notice the correct position of stress on target words. Moreover, when comparing the face-to-face (FTF) recast and synchronous computer-mediated communication (SCMC) groups, the exit questionnaire suggested that only FTF participants noticed and were more likely to take advantage of the feedback provided. Finally, McKinnon analyzed the effects of form-focused instruction on the grammatical and prosodic distinction of declarative and imperative utterances by L1 English learners of Spanish. The findings revealed significant improvement at posttest for learners who had received explicit instruction on both grammar and prosody but not for those who had received instruction only on grammar. These three studies suggest that explicit focus on a variety of L2 pronunciation features (e.g., vowel production accuracy, word stress, sentence prosody) through TBLT techniques (e.g., recasts, task complexity, explicit instruction) have the potential to result in improved L2 pronunciation accuracy. These findings are in line with previous L2 pronunciation findings outside of the TBLT domain (Henriksen, Geeslin, & Willis, 2010; Munro, 1993; Saito, 2013; Saito & Lyster, 2012a, 2012b; Yanguas, 2010).

Another feature of task design under focus in the present issue is task repetition (Jung, Kim, & Murphy, 2017). The role of task repetition on L2 development is grounded in the notion that repetition diverts learners' attention from content and allocates it on the linguistic form (Bygate, 1996, 2001). Jung et al. explored the role of task repetition in the development of L2 stress patterns through collaborative priming tasks. Their findings showed that both task repetition and procedural repetition promoted learners' accurate production of L2 stress patterns, although task repetition was more effective than

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

procedural repetition at retaining accuracy gains according to a delayed posttest. These findings are in line with those of Kim and Tracy-Ventura (2013).

The role of the L1 as a source of interference in developing L2 pronunciation accuracy was relevant in Loewen and Isbell's study. They found, on average, twice as many pronunciation LREs in L1-unmatched than in L1-matched participant dyads, suggesting that pairing learners of different L1s may be a useful methodological and pedagogical strategy to enhance the occurrence of pronunciation LREs and promote noticing of relevant cross-language pronunciation differences (see Jenkins, 2000, for similar results).

One study (Solon et al., 2017) specifically examined the role of task complexity in increasing linguistic accuracy, a topic heavily researched in the field of TBLT (Robinson, 2001, 2007), here applied to pronunciation accuracy in L2 vowels. They used simple (few elements) and complex (many elements) maps to elicit the pronunciation of word forms (street names) that contained target L2 vowels in an interactive map task where learners gave and received directions. Thus, the target words were elicited in sentences during communicative interaction, an elicitation context previous research in phonetic training has shown to produce greater gains in production accuracy than words in isolation (Hirata, 2004). Their findings supported Robinson's cognition hypothesis in that the more complex version of the task generated more accurate realizations of L2 Spanish vowels.

Finally, two studies investigated the effects of task modality on the number of pronunciation-focused LREs and the use of recasts. In Loewen and Isbell's study, the FTF and SCMC conditions generated a similar number of LREs and recasts, which might be due to the L1-matched learner pairings. In Parlak and Ziegler's study, learners in the FTF (but not in the SCMC) condition were more accurate at placing the stress after receiving recasts. However, in this study, learners reported feeling less anxiety when interacting in the SCMC than in the FTF condition and admitted perceiving the tasks in the SCMC environment to be more useful. Consequently, SCMC may lead to higher frequency of LREs and consequently more opportunities for learners to focus on pronunciation.

Taken together, the present studies provide excellent examples of the application of widely accepted and extensively researched TBLT techniques, such as task repetition, task complexity, and task modality, to drawing learners' attention to phonetic form and to assessing the potential of tasks for developing L2 pronunciation. This research underscores the importance of investigating the potential of tasks within a TBLT approach to generate form-focused episodes targeting phonological elements and dimensions during meaning-based interaction. After all, L2 pronunciation cannot be dissociated from other dimensions of L2 speech production with which it needs to be acquired and developed. The findings of the studies in this special issue show that TBLT hypotheses and findings previously applied to grammar and lexis can be effectively extended to the acquisition of L2 pronunciation. Tasks may be designed to include features that can draw learners' attention to pronunciation targets or that will raise their awareness of pronunciation issues by making such targets task-essential or by enhancing the occurrence of pronunciation-focused LREs in peer interaction during task performance. Indeed, drawing learners' attention to phonetic form during meaningful task performance, for example using recasts (e.g., Saito & Lyster, 2012b), can have a positive impact on L2 pronunciation. Raising learners' awareness of L2 pronunciation features

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

may also have a similar positive impact, as higher levels of phonological awareness have been linked to greater levels of achievement in L2 pronunciation (Kennedy & Trofimovich, 2010; Kennedy, Blanchet, & Trofimovich, 2014; Kivistö-de Souza, 2015; Piske, 2008; Venkatagiri & Levis, 2007; Wrembel, 2015).

From a research perspective, exploiting the potential of task design and the manipulation of task features for L2 pronunciation development presents several challenges that are specific to the nature of L2 phonological acquisition. In the following section, we present a research-based perspective on key issues within a TBLT approach to L2 pronunciation development with the aim of identifying crucial research questions in TB*P*T and promoting future research in the area.

FUTURE DIRECTIONS IN TB*P*T: RESEARCHING THE POTENTIAL OF TBLT IN L2 PRONUNCIATION DEVELOPMENT

Several areas of TBLT research are in urgent need of empirical studies with a focus on L2 pronunciation. A fundamental aim of this research should be to identify the features of task design already extensively researched in TBLT that may generate a greater impact on L2 pronunciation (*task factors*): task *complexity*, task *sequencing*, task *types*, task *modality*, and task *repetition*. This research agenda should also consider important *learner factors* already investigated for grammar and lexical development in TBLT that are likely to impact the effectiveness of tasks in promoting L2 speech learning, such as L2 proficiency, L1 background, affective variables, and cognitive control.

TASK FACTORS

Task complexity has been widely researched in TBLT. Research on the effects of task complexity on L2 pronunciation should aim at extending hypothesis-testing already carried out in the area of grammar and lexis to the area of pronunciation (see Solon et al.'s study). In particular, Robinson's cognition hypothesis (Robinson, 2001, 2007) or Skehan's (1996, 1998a) trade-off hypothesis could be tested for pronunciation accuracy and fluency. This will in turn require operationalizing gains in pronunciation *accuracy* and *fluency* from a phonological acquisition perspective. Such phonology-specific definitions of pronunciation accuracy and fluency will differ from the way these dimensions of oral production have been operationalized for grammar and lexical development, as they will need to include phonetic measures of accuracy based on the contrastive effectiveness of phonetic distance between L2 sounds or phonetic fluency measures based on articulatory-based processes of segmental linking and resyllabification (e.g., Hieke, 1984; Schwartz, 2016). For example, assessing the effect of form-focused instruction on *accuracy* in the perception and production of segmental contrasts entails measuring its effects on the *contrastive accuracy* with which a contrast is perceived or produced. In perception, sensitivity to L2-specific phonetic features distinguishing contrasting L2 sounds is often trained (e.g., Carlet & Cebrian, 2015; Logan, Lively, & Pisoni, 1991; Strange & Dittmann, 1984) and measured through identification and discrimination tasks. In identification tasks learners are asked to label L2 sounds in terms of L1 sound categories (often also providing a rating of how well the L2 sound fits the L1 category). In discrimination tasks learners may be asked to determine whether a

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

pair of L2 sounds are the same or different (AX), whether the last sound in a triad is the same as one of two previously presented sounds (ABX), or to identify the odd sound out in a triad (oddity), among others (see Flege, 2003, for an overview) presenting high-variability stimuli. In production, accuracy in the use of contrasting features for distinguishing L2 sound contrasts (e.g., vowels) have been assessed through various spectral or duration distance measures such as Euclidean distance scores (e.g., Flege, Bohn, & Jang, 1997) or Pillai scores (e.g., Amengual & Chamorro, 2015). An important goal and challenge in the development of pronunciation-focused task-based design is to adapt the design features and assessment methods of perception and production training, such as the use of high-variability stimuli and phonetic cue manipulations in perceptual training (Iverson et al., 2005) or visual feedback in production training (e.g., Kartushina, Hervais-Adelman, Frauenfelder, & Golestani, 2015), for their use in interactive communicative tasks that focus on phonetic form. In addition, given the prevalent role assigned to cross-language perception of L1-L2 sound differences in predicting developmental difficulties in phonetic learning (Best & Tyler, 2007; Flege, 1995), task design features could exploit cross-language differences at the phonetic level as a means of raising learners' phonological awareness of crucial differences between the L1 and L2 phonetic and phonological systems.

TBLT studies (de Jong, Steinel, Florijn, Schoonen, & Hulstijn, 2012; Gilabert, 2007a, 2007b; Kuiken & Vedder, 2007; Michel, Kuiken, & Vedder, 2007) have analyzed fluency, lexical and structural complexity, and accuracy as grammatical and lexical dimensions of L2 production. No study to date in this area has measured L2 pronunciation or established awareness and control of pronunciation during task performance, or determined whether it is affected by the degree of cognitive complexity of the task. Here, two different research perspectives may be undertaken. One would aim at establishing whether the cognition hypothesis holds for L2 pronunciation—that is, whether a cognitively more complex task results in phonetically more accurate speech production, or more accurate production of phonologically more complex sounds or sound sequences, as it has been shown to be the case for linguistic complexity and grammatical accuracy (e.g., Robinson, 2007; Robinson & Gilabert, 2007). Another perspective would aim at examining whether Skehan's (1998a, 2009) trade-off hypothesis could be applied to L2 pronunciation. That is, does an increase in pronunciation accuracy resulting from a cognitively more complex task induce a decrease in pronunciation fluency? Also, would L2 pronunciation accuracy and fluency be competing with lexical and grammatical accuracy, complexity, and fluency? To what extent would a focus on phonetic form affect such trade-offs between dimensions of oral production?

At the level of L2 development, the use of different principles of task sequencing, such as Robinson's (2010) SSARC model might also be investigated in the context of task effects on L2 pronunciation development. Task sequencing is still an under-researched area in TBLT (see Baralt et al., 2014), but insights about the use of sequencing techniques in TB*P*T will represent an important step forward for TBLT researchers and foreign language teachers concerned with the integration of pronunciation instruction within regular meaning-oriented teaching practices. In this respect, it may be important to consider how the benefits of sequencing tasks in terms of cognitive complexity may be enhanced by integrating the sequencing of phonetic complexity in task design (e.g.,

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

segmental production in simple vs. complex syllable structure, in the silence vs. in noise, in short vs. long words, or in single vs. multiple talker contexts), as cognitive and linguistic complexity may interact in complex ways in task sequencing.

Task types have been shown to play a role in L2 production (Gao, 2014; Gilabert, Barón, & Llanes, 2009; Skehan & Foster, 1997). For example, a map task does not produce the same amount of complex syntactic structures as a narrative task. Certain interactive task types requiring an emphasis on intelligibility or comprehensibility (e.g., Saito & Akiyama, 2016) may be more effective at generating pronunciation-related episodes than others or at raising awareness of cross-language phonetic differences. However, interactional tasks can be used as reliable testing instruments in discriminating between learners' various performance levels. For example, van Batenburg, Oostdam, van Gelderen, and de Jong (2016) measured linguistic accuracy and interactional ability through six dialogic scripted speech tasks and found positive strong correlations between all six tasks while differentiating effectively between L2 learners.

Task modality has recently gained a great deal of attention in TBLT, especially through studies that contrast FTF and SCMC modalities in their potential for generating attention to linguistic form (Baralt, 2010; González-Lloret & Ortega, 2014; Loewen & Erlam, 2006), including the studies by Loewen and Isbell and Parlak and Zieger in the present issue that examine task modality effects on L2 pronunciation. Research on task modality effects on L2 pronunciation is of particular interest for L2 pronunciation instruction in a TBLT context for at least two reasons. First, speaking in a foreign language in front of fellow classmates is intimidating (Aida, 1994; Horwitz, Horwitz, & Cope, 1986; MacIntyre & Gardner, 1989), and this is especially so when the FonF targets features of L2 pronunciation. A computer-mediated environment is less stressful and motivating and, consequently, potentially more effective at eliciting pronunciation-focused LREs (see Parlak & Ziegler, this issue). Second, SCMC provides students with the possibility of performing interactive communicative tasks with L2 learners of many different L1 backgrounds or native speakers of the target language, which is essential for fostering awareness of pronunciation problems and L1-L2 phonological differences essential to promote the acquisition of L2 phonology.

Finally, although task repetition has been widely researched in TBLT (Bygate, 2000; Gass, Mackey, Alvarez-Torres, & Fernández-García, 1999; Kim & Tracy-Ventura, 2013) the focus has been on the development of L2 lexical and grammatical forms. No studies to date (except Jung et al., this issue) have investigated the role of task repetition in the development of L2 pronunciation. Task repetition is a very useful task design feature in providing learners with the repetitive practice of L2 input that is necessary for developing learners' efficiency in the processing of L2 speech, which in turn facilitates the development of L2 pronunciation (Trofimovich & Gatbonton, 2006).

LEARNER FACTORS

The role of learner factors in TB*P*T research is especially important, as they may explain a substantial amount of the large variation in pronunciation accuracy usually reported in L2 speech learning studies. Interlearner variation in pronunciation is larger than in other domains of L2 competence at all levels of proficiency (Moyer, 1999, 2014), and learners vary greatly in how much they can benefit from pronunciation instruction and phonetic

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

training (Lengeris & Hazan, 2010). First language background, L2 proficiency, affective variables, and cognitive ability are among the learner factors that may play an important role in TB*P*T research.

The learners' L1 background is a key variable in L2 pronunciation development within TBLT. One reason for this is that, as shown by L2 speech research and phonetic training studies, the mechanisms underlying the human capacity for learning new L2 sounds and sound patterns remains accessible in adult L2 acquisition (see Bohn & Munro, 2007 for an overview). Such mechanisms rely heavily on perceptual sound assimilation and dissimilation processes affecting the nature of the cross-language interactions between a well-established native phonological system and the L2 phonological system (e.g., Flege, Schirru, & MacKay, 2003). Learners' L2 phonology is constrained by their ability to perceive L1-L2 differences in sound structure, and L2 pronunciation targets need to be identified with reference to the learners' L1. Another crucial reason is that L1 background is a main factor in determining degree of perceived accentedness, comprehensibility, and intelligibility (e.g., Derwing & Munro, 1997, 2005). In addition, L2 pronunciation may be said to be different from other domains of language in that its development relies heavily on speech motor control and auditory-perceptual mechanisms and processes that are extremely efficient and automatized in L1 speech production and perception (Moyer, 2014; Scovel, 1988) and that need to readjust and develop to similar efficiency rates in the L2. This requires, for example, learning to execute and automatize new articulatory targets in the production of L2 sounds that may be new or only partly different from existing L1 sounds, or learning to attend to and use L2 acoustic cues that are linguistically irrelevant in the L1, or learning to weigh L1 acoustic cues differently or for a different purpose in the perception of phonological contrasts. In the design of pronunciation-focused interactive communicative tasks, therefore, it becomes essential to assess the role of the learners' L1 when dealing with groups of L2 learners that are not homogeneous with respect to L1 background and engage in meaningful interaction. Exploiting the potential of L1-based intelligibility issues arising during interactive task performance to generate pronunciation-focused LREs may prove an excellent resource in developing L2 phonological awareness.

Another key learner factor in L2 production and development in different linguistic domains is L2 proficiency (Kuiken & Vedder, 2007; Malicka & Levkina, 2012). Clearly, from a language processability theory perspective (Pienemann, 1998), TB*P*T research should consider learners' developmental stages in the acquisition of L2 phonology. Evidence of this comes from studies conducted within communicative approaches to L2 pronunciation instruction where L2 proficiency has been shown to limit the effectiveness of form-focused instruction. This is because learners' proficiency levels might have been too low for them to benefit from a given instructional treatment, such as corrective feedback (Saito & Akiyama, 2016) or repetition (Trofimovich & Gatbonton, 2006). Lower-level learners may need opportunities for developing their L2 phonology through repetition and awareness development without being under pressure for producing modified output.

Affective variables such as motivation and anxiety (Dörnyei, 1994, 1998, 2001), widely researched in SLA, particularly in TBLT, cannot be ignored when dealing with L2 pronunciation. Affective variables may play an important role in L2 pronunciation development (Saito, Dewaele, & Hanzawa, in press), especially in communicative

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

approaches to form-focused instruction where attention to pronunciation targets is generated through interactive tasks. Higher levels of pronunciation anxiety (self-perceived lack of pronunciation ability) appear to be related to lower degrees of willingness to communicate in language classrooms (Baran-Łucarz, 2014). Communicative interactive tasks can provide a form of sheltered instruction where learners with self-perceived poorer pronunciation skills may therefore feel more at ease in the use of the L2 than in other activity types.

Finally, individual differences in cognitive ability, such as working memory, attention, and inhibition, have been investigated in task-based studies (Kormos & Sáfár, 2008; Levkina, 2014; Sagarra, 2007) as well as in the acquisition of L2 phonology (Darcy, Mora, & Daidone, 2016; Darcy, Park, & Yang, 2015; Lev-Ari & Peperkamp, 2013, 2014; Scharenborg, Weber, & Janse, 2015; Trude & Tokowicz, 2011). This research has revealed the role of individual differences in explaining interlearner variation in L2 performance and acquisition. Investigating individual differences in working memory, attention control, and inhibitory capacity may be crucial for interpreting the findings of TB*P*T research, which explores the effectiveness of task manipulations in promoting attention to phonetic form. Both the amount of attention learners devote to the phonological form of utterances during meaningful interaction and their ability to benefit from pronunciation-focused tasks may depend on such individual cognitive differences. Although no studies to date have examined individual differences in cognitive ability in the context of TB*P*T, research investigating the interaction between learner factors and training paradigm (Perrachione, Lee, Ha, & Wong, 2011) suggests that learning outcomes in the domain of L2 pronunciation are likely to be strongly affected by how learner factors involving their perceptual and productive phonological skills interact with task design features and perhaps even the individual differences of those interacting with learners as well (Gurzynski-Weiss & Plonsky, in press).

CONCLUSIONS

TB*P*T is still lacking systematic research about the role of tasks in effectively directing learners' attention to phonetic form as a means of facilitating L2 pronunciation development in meaning-oriented instructed SLA. At present, we do not know to what extent the manipulation of certain task features may be effective in modifying learners' output toward more accurate pronunciation. The empirical studies in the present issue offer solid evidence of the potential of tasks for improving L2 pronunciation, both in terms of the methods employed and of the outcomes obtained. However, as emphasized here and in the studies in this special issue, much empirical research is needed in this area.

In this article, we hope to have highlighted several fundamental issues in the definition and identification of task features as applied to L2 pronunciation instruction in the hope of motivating further empirical research. The empirical studies in this special issue represent a first important contribution to the field of TB*P*T, as overall they show the potential of task design and manipulation to induce a focus on phonetic form during meaningful communicative interaction. Task design can be effectively used to make pronunciation elements key to task completion and to enhance attention to them, generating pronunciation-focused LREs, all of which promotes awareness of pronunciation problems, a necessary first step toward pronunciation development. However,

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

several important issues about the effectiveness of task design for L2 pronunciation development remain unexplored and in need of empirical investigation. For example, an important methodological issue in task design in TB*P*T is how to reconcile the need to make pronunciation elements task-essential during communicative interaction and at the same time provide learners with fair amount of input and output practice. Large amounts of input and output practice provided through high-variability phonetic training protocols have proved very successful in effecting positive changes in L2 perception and production. Whether pronunciation-focused tasks, providing a more limited amount of input, will be equally or comparably effective in enhancing pronunciation development remains an empirical question. Another important aspect of pronunciation-focused task design in the context of communicative peer interaction is the nature of the phonetic input learners obtain from peers, which is very likely to be strongly accented, especially at lower levels of proficiency. Task design features would therefore need to include some mechanism that allows learners to get exposure to authentic speech input during task performance. This remains a challenge in task design, but it is certainly possible. For example, a collaborative map task such as that used in Solon, Long, and Gurzynski-Weiss (2017) study could incorporate a feature allowing learners to hear the name of the streets as pronounced by nativelike speakers as the move over them with the cursor.

Another fundamental issue concerns the effectiveness of task design and task manipulations in directing learners' attention to phonetic form during meaning-focused interaction and in making the learners notice and process the target phonological feature to promote learners' use of the target sound or sound structure. This may prove particularly demanding when directing attention to form is intended to develop learners' awareness of the cross-language differences between the L1 and the L2 phonologies at the segmental or suprasegmental levels, as meaningful interaction between L2 learners is limited in the amount of cross-language differences it can uncover and bring to the learners' attention, especially at lower proficiency levels. However, in L1-mixed classroom learning contexts, awareness of phonetic form differences can be enhanced by pairing learners of different L1s in interactive tasks, or, given what today's technology can offer, the use of video-based interactive tasks may prove an excellent tool in enhancing awareness of pronunciation errors by engaging L2 learners and L2 speakers in interaction (e.g., Saito & Akiyama, 2016). Research in this area is particularly important to help us understand how to best promote and ensure learners benefit from tasks in L2 speech learning.

We would like to conclude this article with a call for research on the role of tasks on L2 pronunciation development addressed to both TBLT and L2 speech researchers (i.e., TB*P*T), a promising research avenue that will hopefully contribute to creating more effective methods for language teaching and learning.

REFERENCES

Aida, Y. (1994). Examination of Horwitz, Horwitz, and Cope's construct of foreign language anxiety: The case of students of Japanese. *Modern Language Journal*, *78*, 155–168.

Amengual, M., & Chamorro, P. (2015). The effects of language dominance in the perception and production of the Galician mid vowel contrasts. *Phonetica*, *72*, 207–236.

Baker, A. (2014). Exploring teachers' knowledge of second language pronunciation techniques: Teacher cognitions, observed classroom practices, and student perceptions. *TESOL Quarterly*, *48*, 136–163.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Baralt, M. (2010). *Task complexity, the cognition hypothesis, and interaction in CMC and FTF environments* (Unpublished doctoral dissertation). Washington, DC: Georgetown University.

Baralt, M., Gilabert, R., & Robinson, P. (Eds.). (2014). *Task sequencing and instructed second language learning*. London, UK: Bloomsbury Publishing.

Baran-Łucarz, M. (2014). The link between pronunciation anxiety and willingness to communicate in the foreign-language classroom: The Polish EFL context. *Canadian Modern Language Review*, *70*, 445–473.

Benzeghiba, M., De Mori, R., Deroo, O., Dupont, S., Erbes, T., Jouvet, D., et al. (2007). Automatic speech recognition and speech variability: A review. *Speech Communication*, *49*, 763–786.

Best, C., & Strange, W. (1992). Effects of phonological and phonetic factors on cross-language perception of approximants. *Journal of Phonetics*, *20*, 305–331.

Best, C., & Tyler, M. (2007). Non-native and second language speech perception. In O.-S. Bohn & M. J. Munro (Eds.), *Language experience in second language speech learning* (pp. 15–34). Amsterdam, The Netherlands: John Benjamins.

Bohn, O.-S., & Munro, M. J. (Eds.). (2007). *Language experience in second language speech learning*. Amsterdam, The Netherlands: John Benjamins.

Bradlow, A. (2008). Training non-native language sound patterns: Lessons from training Japanese adults on the English /ɹ/-/l/ contrast. In J. G. Hansen Edwards & M. L. Zampini (Eds.), *Phonology and second language acquisition* (pp. 287–308). Amsterdam, The Netherlands: John Benjamins.

Browman, C. P., & Goldstein, L. (1992). Articulatory phonology: An overview. *Phonetica*, *49*, 155–180.

Burgess, J., & Spencer, S. (2000). Phonology and pronunciation in integrated language teaching and teacher education. *System*, *28*, 191–215.

Bygate, M. (1996). Effects of task repetition: Appraising learners' performances on tasks. In J. Willis & D. Willis (Eds.), *Challenge and change in language teaching* (pp. 136–146). London, UK: Heinemann.

Bygate, M. (2001). Effects of task repetition on the structure and control of oral language. In M. Bygate, P. Skehan, & M. Swain (Eds.), *Researching pedagogical tasks: Second language learning, teaching and testing* (pp. 23–48). Harlow, UK: Pearson Education.

Bygate, M. (Ed.). (2000). Tasks in language pedagogy. *Language Teaching Research*, *4*, 185–192.

Carlet, A., & Cebrian, J. (2015). Identification vs. discrimination training: Learning effects for trained and untrained sounds. In the Scottish Consortium for ICPhS 2015 (Ed.), *Proceedings of the 18th International Congress of Phonetic Sciences*. Glasgow, UK: University of Glasgow. Retrieved from http://www.icphs2015.info/pdfs/proceedings.html.

Cebrian, J. (2006). Experience and the use of non-native duration in L2 vowel categorization. *Journal of Phonetics*, *34*, 372–387.

Cebrian, J., & Carlet, A. (2014). Second-language learners' identification of target-language phonemes: A short-term phonetic training study. *Canadian Modern Language Review*, *70*, 474–499.

Darcy, I., Ewert, D., & Lidster, R. (2012). Bringing pronunciation instruction back into the classroom: An ESL Teachers' pronunciation "toolbox." In J. Levis & K. LeVelle (Eds.), *Proceedings of the 3rd Pronunciation in Second Language Learning and Teaching Conference* (pp. 93–108). Ames: Iowa State University.

Darcy, I., Mora, J. C., & Daidone, D. (2016). The role of inhibitory control in second language phonological processing. *Language Learning*, *66*, 741–773.

Darcy, I., Park, H., & Yang, C. L. (2015). Individual differences in L2 acquisition of English phonology: The relation between cognitive abilities and phonological processing. *Learning and Individual Differences*, *40*, 63–72.

de Bot, K. (1992). A bilingual production model: Levelt's speaking model adapted. *Applied Linguistics*, *13*, 1–24.

de Jong, N. H., Groenhout, R., Schoonen, R., & Hulstijn, J. H. (2015). Second language fluency: Speaking style or proficiency? Correcting measures of second language fluency for first language behavior. *Applied Psycholinguistics*, *36*, 223–243.

de Jong, N. H., Steinel, M. P., Florijn, A., Schoonen, R., & Hulstijn, J. H. (2012). The effect of task complexity on functional adequacy, fluency and lexical diversity in speaking. In A. Housen, F. Kuiken, & I. Vedder (Eds.), *Dimensions of L2 performance and proficiency: Investigating complexity, accuracy and fluency in SLA* (pp. 121–142). Amsterdam, The Netherlands: John Benjamins.

Derwing, T., & Foote, J. (2011). *2010 National survey of pronunciation teaching: Deja vu*. Paper presented at the Annual Association for Applied Linguistics, Chicago, IL, March 26, 2011.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Derwing, T., & Munro, M. (2014). Once you have been speaking a second language for years, it's too late to change your pronunciation. In L. Grant (Ed.), *Pronunciation myths: Applying second language research to classroom teaching* (pp. 34–55). Ann Arbor: University of Michigan Press.

Derwing, T. M., & Munro, M. J. (1997). Accent, intelligibility, and comprehensibility. *Studies in Second Language Acquisition*, *19*, 1–16.

Derwing, T. M., & Munro, M. J. (2005). Second language accent and pronunciation teaching: A research-based approach. *TESOL Quarterly*, *39*, 379–397.

Derwing, T. M., & Munro, M. J. (2009). Putting accent in its place: Rethinking obstacles to communication. *Language Teaching*, *42*, 476–490.

Derwing, T. M., & Munro, M. J. (2013). The development of L2 oral language skills in two L1 groups: A seven-year study. *Language Learning*, *63*, 163–185.

Derwing, T. M., & Munro, M. J. (2015). *Pronunciation Fundamentals: Evidence-Based Perspectives for L2 Teaching and Research*. Amsterdam, The Netherlands: John Benjamins.

Derwing, T. M., Munro, M. M., & Wiebe, G. (1998). Evidence in favor of a broad framework for pronunciation instruction. *Language Learning*, *48*, 393–410.

Derwing, T. M., Munro, M. J., Thomson, R. I., & Rossiter, M. J. (2009). The relationship between L1 fluency and L2 fluency development. *Studies in Second Language Acquisition*, *31*, 533–557.

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *Modern Language Journal*, *78*, 273–284.

Dörnyei, Z. (1998). Motivation in second and foreign language learning. *Language Teaching*, *31*, 117–135.

Dörnyei, Z. (2001). New themes and approaches in L2 motivation research. *Annual Review of Applied Linguistics*, *21*, 43–59.

Doughty, C., & Williams, J. (Eds.). (1998). *Focus on form in classroom second language acquisition*. Cambridge, UK: Cambridge University Press.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford, UK: Oxford University Press.

Escudero, P. (2009). Linguistic perception of "similar" L2 sounds. In P. Boersma & S. Hamann (Eds.), *Phonology in Perception* (pp. 151–190). Berlin: Mouton de Gruyter.

Flege, J. E. (1987). The production of "new" and "similar" phones in a foreign language: Evidence for the effect of equivalence classification. *Journal of Phonetics*, *15*, 47–65.

Flege, J. E. (1995). Second language speech learning. In W. Strange (Ed.), *Speech perception and linguistic experience: Issues in cross-language research* (pp. 233–277). Timonium, MD: York Press.

Flege, J. E. (2003). Assessing constraints on second-language segmental production and perception. In A. Meyer & N. Schiller (Eds.), *Phonetics and phonology in language comprehension and production: Differences and similarities* (pp. 319–355). Berlin: Mouton de Gruyter.

Flege, J. E. (2009). Give input a chance! In T. Piske & M. Young-Scholten (Eds.), *Input matters in SLA* (pp. 175–190). Bristol, UK: Multilingual Matters.

Flege, J. E., Bohn, O. S., & Jang, S. (1997). Effects of experience on non-native speakers' production and perception of English vowels. *Journal of Phonetics*, *25*, 437–470.

Flege, J. E., Schirru, C., & MacKay, I. R. (2003). Interaction between the native and second language phonetic subsystems. *Speech Communication*, *40*, 467–491.

Flege, J. E., Frieda, E. M., Walley, A. C., & Randazza, L. A. (1998). Lexical factors and segmental accuracy in second language speech production. *Studies in Second Language Acquisition*, *20*, 155–187.

Foote, J. A., Holtby, A. K., & Derwing, T. M. (2011). Survey of the teaching of pronunciation in adult ESL programs in Canada, 2010. *TESOL Journal Canada*, *20*, 1–22.

Gao, X. (2014). The interface of linguistic difficulty and task type on the use of the Chinese ba construction by L2 learners. *Chinese as a Second Language Research*, *3*, 27–51.

Gass, S., Mackey, A., Alvarez-Torres, M. J., & Fernández-García, M. (1999). The effects of task repetition on linguistic output. *Language Learning*, *49*, 549–581.

Gilabert, R. (2007a). Effects of manipulating task complexity on self-repairs during L2 oral production. *International Review of Applied Linguistics in Language Teaching*, *45*, 215–240.

Gilabert, R. (2007b). The simultaneous manipulation of task complexity along planning time and [+/-Here-and-Now]: Effects on L2 oral production. In M. P. García Mayo (Ed.), *Investigating tasks in formal language learning* (pp. 136–156). Clevedon, UK: Multilingual Matters.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Gilabert, R., Barón, J., & Llanes, M. A. (2009). Manipulating cognitive complexity across task types and its impact on learners' interaction during task performance. *International Review of Applied Linguistics*, *47*, 367–395.

González-Lloret, M., & Ortega, L. (Eds.). (2014). *Technology-mediated TBLT*. Amsterdam, The Netherlands: John Benjamins.

Gordon, J., Darcy, I., & Ewert, D. (2013). Pronunciation teaching and learning: Effects of explicit phonetic instruction in the L2 classroom. In J. Levis & K. LeVelle (Eds.), *Proceedings of the 4th Pronunciation in Second Language Learning and Teaching Conference* (pp. 194–206). Ames: Iowa State University.

Guion, S. G., & Pederson, E. (2007). Investigating the role of attention in phonetic learning. In O.-S. Bohn & M. J. Munro (Eds.), *Language experience in second language learning* (pp. 57–77). Amsterdam, The Netherlands: John Benjamins.

Gurzynski-Weiss, L., & Plonsky, L. (in press). Look who's interacting: A scoping review of research involving non-teacher/non-peer interlocutors. In L. Gurzynski-Weiss (Ed.), *Expanding individual difference research in the interaction approach: Investigating learners, instructors, and other interlocutors*. Amsterdam, The Netherlands: John Benjamins.

Henderson, A., Frost, D., Tergujeff, E., Kautzsch, A., Murphy, D., Kirkova-Naskova, A., et al. (2012). The English pronunciation teaching in Europe survey: Selected results. *Research in Language*, *10*, 5–27.

Henriksen, N. C., Geeslin, K. L., & Willis, E. W. (2010). The development of L2 Spanish intonation during a study abroad immersion program in León, Spain: Global contours and final boundary movements. *Studies in Hispanic and Lusophone Linguistics*, *3*, 113–162.

Hieke, A. E. (1984). Linking as a marker of fluent speech. *Language and Speech*, *27*, 343–354.

Hirata, Y. (2004). Computer assisted pronunciation training for native English speakers learning Japanese pitch and durational contrasts. *Computer Assisted Language Learning*, *17*, 357–376.

Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *Modern Language Journal*, *70*, 125–132.

Iverson, P., Hazan, V., & Bannister, K. (2005). Phonetic training with acoustic cue manipulations: A comparison of methods for teaching English/r/-/l/ to Japanese adults. *Journal of the Acoustical Society of America*, *118*, 3267–3278.

Iverson, P., Pinet, M., & Evans, B. G. (2012). Auditory training for experienced and inexperienced second-language learners: Native French speakers learning English vowels. *Applied Psycholinguistics*, *33*, 145–160.

Jamieson, D. G., & Morosan, D. E. (1986). Training non-native speech contrasts in adults: Acquisition of the English/ð/-/θ/contrast by francophones. *Perception and Psychophysics*, *40*, 205–215.

Jenkins, J. (2000). *The Phonology of English as an International Language*. Oxford, UK: Oxford University Press.

Jung, Y., Kim, Y., & Murphy, J. (2017). The role of task repetition in learning word stress patterns through auditory priming tasks. *Studies in Second Language Acquisition*, *39*(2). doi: 10.1017/S0272263117000031

Kartushina, N., Hervais-Adelman, A., Frauenfelder, U. H., & Golestani, N. (2015). The effect of phonetic production training with visual feedback on the perception and production of foreign speech sounds. *Journal of the Acoustical Society of America*, *138*, 817–832.

Kennedy, S., & Trofimovich, P. (2010). Language awareness and second language pronunciation: A classroom study. *Language Awareness*, *19*, 171–185.

Kennedy, S., Blanchet, J., & Trofimovich, P. (2014). Learner pronunciation, awareness, and instruction in French as a second language. *Foreign Language Annals*, *47*, 79–96.

Kim, Y., & Tracy-Ventura, N. (2013). The role of task repetition in L2 performance development: What needs to be repeated during task-based interaction? *System*, *41*, 829–840.

Kissling, E. M. (2013). Teaching pronunciation: Is explicit phonetics instruction beneficial for FL learners? *Modern Language Journal*, *97*, 720–744.

Kivistö-de Souza, H. (2015). Phonological awareness and pronunciation in a second language (Unpublished doctoral dissertation). Barcelona: Universitat de Barcelona.

Kormos, J. (2006). *Speech Production and Second Language Acquisition*. Mahwah, NJ: Lawrence Erlbaum.

Kormos, J., & Sáfár, A. (2008). Phonological short-term memory, working memory and foreign language performance in intensive language learning. *Bilingualism: Language and Cognition*, *11*, 261–271.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Kuhl, P. K., Conboy, B. T., Coffey-Corina, S., Padden, D., Rivera-Gaxiola, M., & Nelson, T. (2008). Phonetic learning as a pathway to language: New data and native language magnet theory expanded (NLM-e). *Philosophical Transactions of the Royal Society, B 363*, 979–1000.

Kuiken, F., & Vedder, I. (2007). Task complexity and measures of linguistic performance in L2 writing. *International Review of Applied Linguistics*, *45*, 261–284.

Lee, J., Jang, J., & Plonsky, L. (2015). The effectiveness of second language pronunciation instruction: A meta-analysis. *Applied Linguistics*, *36*, 345–366.

Lengeris, A., & Hazan, V. (2010). The effect of native vowel processing ability and frequency discrimination acuity on the phonetic training of English vowels for native speakers of Greek. *Journal of the Acoustical Society of America*, *128*, 3757–3768.

Lev-Ari, S., & Peperkamp, S. (2013). Low inhibitory skill leads to non-native perception and production in bilinguals' native language. *Journal of Phonetics*, *41*, 320–331.

Lev-Ari, S., & Peperkamp, S. (2014). The influence of inhibitory skill on phonological representations in production and perception. *Journal of Phonetics*, *47*, 36–46.

Levis, J. (2005). Changing contexts and shifting paradigms in pronunciation teaching. *TESOL Quarterly*, *39*, 367–377.

Levkina, M. (2014). The role of task sequencing in L2 development as mediated by working memory capacity (Unpublished doctoral dissertation). Universitat de Barcelona.

Lively, S. E., Logan, J. S., & Pisoni, D. B. (1993). Training Japanese listeners to identify English /r/ and /l/: II. The role of phonetic environment and talker variability in learning new perceptual categories. *Journal of the Acoustical Society of America*, *94*, 1242–1255.

Loewen, S., & Erlam, R. 2006. Corrective feedback in the chatroom: An experimental study. *Computer Assisted Language Learning*, *19*, 1–14.

Logan, J. S., Lively, S. E., & Pisoni, D. B. (1991). Training Japanese listeners to identify English/r/and/l: A first report. *Journal of the Acoustical Society of America*, *89*, 874–886.

Long, M. H. (1991). Focus on form: A design feature in language teaching methodology. In K. de Bot, R. Ginsberg, & C. Kramsch (Eds.), *Foreign language research in cross-cultural perspective* (pp. 39–52). Amsterdam, The Netherlands: John Benjamins.

Long, M. H. (2016). In defense of tasks and TBLT: Nonissues and real issues. *Annual Review of Applied Linguistics*, *36*, 5–33.

Lyster, R., Saito, K., & Sato, M. (2013). Oral corrective feedback in second language classrooms. *Language Teaching*, *46*, 1–40.

MacIntyre, P. D., & Gardner, R. C. (1989). Anxiety and second-language learning: Toward a theoretical clarification. *Language Learning*, *39*, 251–275.

Malicka, A., & Levkina, M. (2012). Measuring task complexity. Does EFL proficiency matter? In A. Shehadeh & C. Coombe (Eds.), *Task-based language teaching in foreign language contexts. Research and implementation* (pp. 43–66). Amsterdam, The Netherlands: John Benjamins.

McDonough, K., & Mackey, A. (2006). Responses to recasts: Repetitions, primed production, and linguistic development. *Language Learning*, *56*, 693–720.

McKinnon, S. (2017). TBLT instructional effects on tonal alignment and pitch range in L2 Spanish imperatives versus declaratives. *Studies in Second Language Acquisition*, *39*(2). doi: 10.1017/S0272263116000267

Michel, M. C., Kuiken, F., & Vedder, I. (2007). The influence of complexity in monologic versus dialogic tasks in Dutch L2. *International Review of Applied Linguistics*, *45*, 241–259.

Moyer, A. (1999). Ultimate attainment in L2 phonology. *Studies in Second Language Acquisition*, *21*, 81–108.

Moyer, A. (2009). Input as a critical means to an end: Quantity and quality of experience in L2 phonological attainment. In T. Piske & M. Young-Scholten (Eds.), *Input matters in SLA* (pp. 159–174). Bristol, UK: Multilingual Matters.

Moyer, A. (2014). Exceptional outcomes in L2 phonology: The critical factors of learner engagement and self-regulation. *Applied Linguistics*, *35*, 418–440.

Munro, M. J. (1993). Production of English vowels by native speakers of Arabic: Acoustic measurements and accentedness ratings. *Language and Speech*, *36*, 39–66.

Munro, M. J. (1998). The effects of noise on the intelligibility of foreign-accented speech. *Studies in Second Language Acquisition*, *20*, 139–154.

Park, J. K. (2000). *The effects of forms and meaning-focused instruction on ESL learners' phonological acquisition* (Unpublished doctoral dissertation). Philadelphia: University of Pennsylvania.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Parlak, Ö, & Zeigler, N. (2017). The impact of recasts on the acquisition of primary stress in a computer-mediated environment. *Studies in Second Language Acquisition*, *39*(2). doi: 10.1017/S0272263116000310

Pederson, E., & Guion-Anderson, S. (2010). Orienting attention during phonetic training facilitates learning. *Journal of the Acoustical Society of America*, *127*, EL54–EL59.

Perrachione, T. K., Lee, J., Ha, L. Y., & Wong, P. C. (2011). Learning a novel phonological contrast depends on interactions between individual differences and training paradigm design. *Journal of the Acoustical Society of America*, *130*, 461–472.

Pienemann, M. (1998). *Language processing and second language development*. Amsterdam, The Netherlands: John Benjamins.

Piske, T. (2008). Phonetic awareness, phonetic sensitivity and the second language learner. In J. Cenoz & N. H. Hornberger (Eds.), *Encyclopedia of language and education Vol. 6: Knowledge about language* (pp. 155–166). New York, NY: Springer Science.

Robinson, P. (2001). Task complexity, task difficulty and task production: Exploring interactions in a componential framework. *Applied Linguistics*, *22*, 27–57.

Robinson, P. (2007). Task complexity, theory of mind, and intentional reasoning: Effects on speech production, interaction, uptake of premodified input and perceptions of task difficulty. *International Review of Applied Linguistics in Language Teaching (IRAL)*, *45*, 195–215.

Robinson, P. (2010). Situating and distributing cognition across task demands: The SSARC model of pedagogic task sequencing. In M. Putz & L. Sicola (Eds.), *Cognitive processing in second language acquisition: Inside the learner's mind* (pp. 243–268). Amsterdam, The Netherlands: John Benjamins.

Robinson, P., & Gilabert, R. (2007). Task complexity, the Cognition Hypothesis and second language learning and performance. *IRAL-International Review of Applied Linguistics in Language Teaching*, *45*, 161–176.

Sagarra, N. (2007). From CALL to face-to-face interaction: The effect of computer-delivered recasts and working memory on L2 development. In A. Mackey (Ed.), *Conversational interaction in second language acquisition: A series of empirical studies* (pp. 229–248). Oxford, UK: Oxford University Press.

Saito, K. (2011). Examining the role of explicit phonetic instruction in native-like and comprehensible pronunciation development: An instructed SLA approach to L2 phonology. *Language Awareness*, *20*, 45–59.

Saito, K. (2012). Effects of instruction on L2 pronunciation development: A synthesis of 15 quasiexperimental intervention studies. *TESOL Quarterly*, *46*, 842–854.

Saito, K. (2013). The acquisitional value of recasts in instructed second language speech learning: Teaching the perception and production of English /ɹ/ to adult Japanese learners. *Language Learning*, *63*, 499–529.

Saito, K. (2015). Communicative focus on L2 phonetic form: Teaching Japanese learners to perceive and produce English /r/ without explicit instruction. *Applied Psycholinguistics*, *36*, 377–409.

Saito, K., & Akiyama, Y. (2017). Video-based interaction, negotiation for comprehensibility, and second language speech learning: A longitudinal study. *Language Learning*, *67*, 43–74. doi: 10.1111/lang.12184

Saito, K., & Lyster, R. (2012a). Effects of form-focused instruction and corrective feedback on L2 pronunciation development of /ɹ/ by Japanese learners of English. *Language Learning*, *62*, 595–633.

Saito, K., & Lyster, R. (2012b). Investigating the pedagogical potential of recasts for L2 vowel acquisition. *TESOL Quarterly*, *46*, 385–396.

Saito, K., Dewaele, J.-M., & Hanzawa, K. (2017). A longitudinal investigation of the relationship between motivation and late second language speech learning in classroom settings. *Language and Speech*, 1–19. doi: 10.1177/0023830916687793

Scharenborg, O., Weber, A., & Janse, E. (2015). The role of attentional abilities in lexically guided perceptual learning by older listeners. *Attention, Perception, & Psychophysics*, *77*, 493–507.

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, *11*, 129–158.

Schmidt, R. (1995). Consciousness and foreign language learning: A tutorial on the role of attention and awareness in learning. In R. Schmidt (Ed.), *Attention and Awareness* (pp. 1–63). Honolulu: University of Hawaiì, National Foreign Language Resource Center.

Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3–32). Cambridge, UK: Cambridge University Press.

Schwartz, G. (2016). Word boundaries in L2 speech: Evidence from Polish learners of English. *Second Language Research*, *32*, 397–426.

Scovel, T. (1988). *A time to speak: A psycholinguistic inquiry into the critical period for human speech*. New York, NY: Newbury House Publishers.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press

Segalowitz, N. (2010). *Cognitive bases of second language fluency*. New York, NY: Routledge.
Sharwood Smith, M. A. (1993). Input enhancement in instructed SLA: Theoretical bases. *Studies in Second Language Acquisition*, *15*, 165–179.
Sicola, L., & Darcy, I. (2015). Integrating pronunciation into the language classroom. In M. Reed & J. Levis (Eds.), *Handbook of English pronunciation* (pp. 467–483). Malden, MA: Wiley-Blackwell.
Skehan, P. (1996). A framework for the implementation of task based instruction. *Applied Linguistics*, *17*, 38–62.
Skehan, P. (1998a). *A cognitive approach to language learning*. Oxford, UK: Oxford University Press.
Skehan, P. (1998b). Task-based instruction. *Annual Review of Applied Linguistics*, *18*, 268–286.
Skehan, P. (2009). Modelling second language performance: Integrating complexity, accuracy, fluency and lexis. *Applied Linguistics*, *30*, 510–532.
Skehan, P., & Foster, P. (1997). Task type and task processing conditions as influence on foreign language performance. *Language Teaching Research*, *1*, 185–211.
Solon, M., Long, A. Y., & Gurzynski-Weiss, L. (2016). Task complexity, language-related episodes, and production of L2 Spanish vowels. *Studies in Second Language Acquisition*, *39*(2). doi: https://doi.org/10.1017/S0272263116000425
Strange, W., & Dittmann, S. (1984). Effects of discrimination training on the perception of/rl/by Japanese adults learning English. *Perception and Psychophysics*, *36*, 131–145.
Thomson, R. (2012). Improving L2 listeners' perception of English vowels: A computer-mediated approach. *Language Learning*, *62*, 1231–1258.
Thomson, R. I., & Derwing, T. M. (2015). The effectiveness of L2 pronunciation instruction: A narrative review. *Applied Linguistics*, *36*, 326–344.
Trofimovich, P., & Gatbonton, E. (2006). Repetition and focus on form in processing L2 Spanish words: Implications for pronunciation instruction. *Modern Language Journal*, *90*, 519–535.
Trude, A. M., & Tokowicz, N. (2011). Negative transfer from Spanish and English to Portuguese pronunciation: The roles of inhibition and working memory. *Language Learning*, *61*, 259–280.
van Batenburg, E. S., Oostdam, R. J., van Gelderen, A. J., & de Jong, N. H. (2016). Measuring L2 speakers' interactional ability using interactive speech tasks. *Language Testing*, 1–26. doi: 10.1177/0265532216679452
VanPatten, B. (2002). Processing instruction: An update. *Language Learning*, *52*, 755–803.
Venkatagiri, H. S., & Levis, J. M. (2007). Phonological awareness and speech comprehensibility: An exploratory study. *Language Awareness*, *16*, 263–277.
Willis, J. (1996). *A framework for task-based learning*. Harlow, Essex: Longman.
Wrembel, M. (2015). Metaphonological awareness in multilinguals: A case of L3 Polish. *Language Awareness*, *24*, 60–83.
Wright, B. A., Baese-Berk, M. M., Marrone, N., & Bradlow, A. R. (2015). Enhancing speech learning by combining task practice with periods of stimulus exposure without practice. *Journal of the Acoustical Society of America*, *138*, 928–937.
Yanguas, Í. (2010). Oral computer-mediated interaction between L2 learners: It's about time! *Language Learning and Technology*, *14*, 72–93.
Ylinen, S., Uther, M., Latvala, A., Vepsäläinen, S., Iverson, P., Akahane-Yamada, R., & Näätänen, R. (2010). Training the brain to weight speech cues differently: A study of Finnish second-language users of English. *Journal of Cognitive Neuroscience*, *22*, 1319–1332.
Zielinski, B., & Yates, L. (2014). Pronunciation instruction is not appropriate for beginning-level learners. In L. Grant (Ed.), *Pronunciation myths: Applying second language research to classroom teaching* (pp. 56–79). Ann Arbor: University of Michigan Press.

https://doi.org/10.1017/S0272263117000183 Published online by Cambridge University Press